

**FACULTY OF PURE AND
APPLIED SCIENCES
MONA**

Year ending July 31, 2008



Ronald E. Young, BSc, MSc *UWI*, PhD *St. And* – Dean

Dean's Overview

HIGHLIGHTS

Scholarly Activities

The Faculty, in 2007-2008, the 60th Anniversary of The University of the West Indies, mounted a series of monthly distinguished public lectures – inaugural lectures by recently appointed professors in the Faculty or by prominent visitors. These latter included lectures by **Professor Vratislav Langer** of the University of Gothenburg and **Professor Robert Trivers** of Rutgers University, recent recipient of the Crafoord Prize, offered by the Royal Swedish Academy of Sciences as the equivalent of the Nobel Prize for Biology which is not one of the subject areas covered by the Nobel Prize. This effort greatly raised the level of academic discourse in the Faculty and was well received. The biennial Faculty Conference, chaired by Professor Ralph Robinson, focused on Ethical Issues and had as its keynote speaker Professor Kenneth Goodman of the University of Miami Ethics Programs, one of the leaders in promoting a focus on ethics at all levels in Universities. Professor Goodman spoke on “*Science and Ethics Announce Wedding Plans: On the Need for Robust Research Ethics Curricula*”. Professor Robert Lancashire, Deputy Dean in the Faculty, gave a special 60th Anniversary Lecture on the ‘*The first UCWI PhD and early studies from the Chemistry Department*’. Dean Young spoke on *Science and Innovation in Jamaica* at the International Symposium – *From the Lab to the User: Wise Practices in Support of Innovation, Research and Development in Universities, Research Centres and National Industries* (San Juan de Puerto Rico) put on by UNESCO in collaboration with the University of Puerto Rico and the Puerto Rico Industrial Development Company. He gave

the inaugural Garth Taylor Lecture on “*The Eyes Have It!*” at the Ophthalmological Society of the West Indies annual meeting in July 2008.

The Departments of the Faculty also hosted five international symposia and eight local workshops and other outreach fora for students, teachers and professionals including farmers. Following the lead of the Faculty of Social Sciences, the Faculty of Pure & Applied Sciences also hosted a Cross-Campus Workshop which highlighted similarities and differences between the Campuses and aimed at harmonizing approaches to pedagogy, regulations and research and optimizing the use of personnel and facilities across campuses. Many faculty members from corresponding disciplines met each other for the first time and several new collaborative initiatives were arranged, including the proposal to mount a cross-campus MSc in Alternative Energy. The consensus was that the meetings were a resounding success.

Dr. Trevor Yee of the Natural Products Institute in collaboration with Professor Helen Jacobs of the Chemistry Department received the first United States patent for the Mona Campus for their new and extremely efficient method of extracting the active principles from Bitterwood. It is hoped that this will form the basis for upgrading an old industry from the export of raw materials (bitterwood chips) to the export of a more finished product further along the value chain. Bitterwood is an important component in the beverage industry.

A stellar highlight of the year was the sharing in the Nobel Peace Prize for 2007 by **Professor Anthony Chen** a lead author for the chapter “*Impact of Climate Change on Small Island States*” in the *Fourth Assessment Report on Climate Change* by the Intergovernmental Panel on Climate Change which led to the sharing of the Prize between the IPCC and Mr. Al Gore, former United States Vice President, for increasing knowledge about man-made climate change and for laying the framework for counteracting these changes.

Honours & Awards

This undoubtedly was an outstanding year for the Physics Department. **Professor Anthony Chen** and **Dr. Michael Taylor** received the Principal’s Award for the *Most Outstanding Research Activity* in the Faculty for their work on “*The Scientific Basis of Climate Change as it impacts Small Island Developing States*”. **Drs. Joseph Skobla** and **Florin**

Ionica received the award for *The Research Project with the Greatest Business/Economic/Development Impact* for the project “Monitoring System of the Hunt’s Bay Bridge on Highway 2000”. **Dr. Tannecia Stephenson, Professor Anthony Chen** and **Dr. Michael Taylor** shared the award for the *Best Research Papers* for their article “Towards the Development of Prediction Models for the Primary Caribbean Dry Season” with **Professor David Barker** and **Dr. Clinton Beckford** for their article “Plastic yam and plastic yam sticks – perspectives on indigenous knowledge among Jamaican farmers” and with **Professor Ralph Robinson, Miss Celia Waugh** and **Dr. John Lindo** for their article “Population distribution and zoonotic potential of gastrointestinal helminths of wild rats, *Rattus rattus* and *R. norvegicus*, from Jamaica”. **Professor Edward Robinson** and **Miss Shakira Kahn** of the **Marine Geology Unit** received the award for the *Project Attracting the Most Research Funds* for the year 2006/07 for their project BEACHES – *Beach Erosion and other Coastal Hazards – Ensuring Safety*. **Dr. Paula Tennant** was co-author of a paper that received the Principal’s award for *Best Research Publication* in the Faculty of Social Sciences.

Professor Helen Jacobs received the 2007 Gleaner Honour Award (Science & Technology category) for Outstanding Contribution in the Field of Chemistry.

Mr. Kevon Rhiney of the Department of Geography & Geology received the Prime Minister’s National Youth Award for Excellence in Academics and **Mr. Seymour Webster** a graduate student in the Biotechnology Centre received the 2007 SRC/JPS Young Scientist of the Year award. A student of the Biotechnology Centre also won the 2006 Young Scientist of the Year award.

STAFF

The Faculty notes with regret the retirement of **Professor Trevor Jackson**, former Campus Coordinator for Graduate Studies & Research. There were two faculty resignations, with two Assistant Lecturers being appointed as replacements. Two new lecturers were appointed Computer Science, and two temporary Assistant Lecturers were appointed as replacements for Faculty on leave to pursue the PhD in Information Systems. The Faculty notes with pleasure that, one, **Lila Rao-Graham** has now successfully completed the PhD programme. **Dr. Ezra Mugisa** having resigned whilst on no-pay leave has rejoined the staff in Computer Science. The number of full-time, full-contract

faculty (see below) seem to have fallen from 83 to 76. Mrs. Heather Lyttle, Senior Secretary in the Faculty Office, retired after years of service to two successive Deans.

As of April 2008 Dean Young was appointed Pro Vice Chancellor for Graduate Studies and Professor Ishenkumba Kahwa was appointed Acting Dean to assume the full Deanship at the end of the academic year.

PUBLICATIONS

Total refereed publications rose from 86 to 99 (15%) and the output per full-time, permanent faculty member rose from 1.04 to 1.30. This is a heartening rise in productivity per full-time faculty member. The per capita output from the Biotechnology Centre continued its commendable rise, moving from 2.25 in 2006/07 to 3.50, approaching the expected target of 4 for a research centre. Chemistry led the field among teaching departments, increasing from 1.1 to 1.8 and switching positions with Geography & Geology. Output from Life Sciences and Physics rose from 0.4 and 0.5 to 0.67, a positive change, but this is still below expectations (2) for a teaching department. Per capita output in Math and Computer Science increased from 1.06 to 1.56 but remained in second place behind Chemistry. Total non-refereed publications plus conference presentations for the Faculty rose to 167, returning towards earlier levels. Output from the majority of units in the Faculty remains disappointingly low although the qualitative contributions from Physics and the gaining of a USA patent by the NPI should be acknowledged.

Department	No. Acad. Staff	Refereed Publications	Non-Refereed Publications	Conference Presentations
Biotechnology Centre	4	14 (3.50)*	2	10
Chemistry	15	27 (1.80)	4	13
Geography & Geology	11	13 (1.18)	--	57
Life Sciences/CMS	18	12 (0.67)	9	33
Mathematics & Computer Science	9 7	14 (1.56) 7 (1.00)	-- --	16 5
Physics	8	6 (0.75)	--	12
Electron Microscopy	2	1 (0.50)	2	--
NPI/MIAS	3	2 (0.67)	1	3
TOTAL:	76	99† (1.30)	18	149

NB: Members of staff on Sabbatical Leave and who are research assistants were not included

*Refereed publications per full-time, full-contract staff member in brackets

†Total may be less than the sum because two departments may share a single paper.

UNDERGRADUATE PROGRAMME

Registration

Despite the effort to make early offers and to provide early orientation in the Summer prior to 2006/07, and despite the positive response obtained from some parents and students, registrations at mid-October 2006 were down 10.4% compared to 2005. By the end of the year however, registrations were at 2217, up by 5.6% compared to the same period in the preceding year. A possible explanation of this is that despite the early offers, increased financial strictures and lack of preparedness prevented many from exploiting the opportunity, resulting in late financial clearance. The situation this year is even more troubling, however, since in October 2007, registrations were up by 14.7% as might have been expected, but this margin was reversed to down by 1.2% by the end of the year. This suggests that on the average, the increased intake based upon efforts to facilitate entry, was completely negated by dropout due to inability to meet the financial commitment.

Several departments have worked hard and with some success at increasing the numbers of undergraduates placed in internships in

industries and research labs as a part of their programmes. This along with an increased emphasis on field trips in some cases is intended to increase hands-on experience of our graduates and their ability to deal with real-world situations, and it is hoped that other departments will follow suit. Cost constraints, however, do pose a major problem.

Registered Undergraduate Students

		2004/05	2005/06	2006/07	2007/08
Female	F/T	748	805	693	876
	P/T	56	59	83	64
Sub total		806	864	776	940
Male	F/T	620	656	536	613
	P/T	67	73	115	84
Sub total		687	729	651	697
TOTAL REGISTERED		1,493*	1,593*	1,427*	1,637*
		2002†	2100†	2217†	2190†

*Information downloaded for October at start of each year

†Information downloaded for August at end of each year

BSc Degree Results

The size of the graduating class fell this year by 13.8 %, reversing the trend of a few years. The percentage of first class and upper second class degrees continued to fall while Pass degrees on the other hand increased from 27.1% in 2006/07 to 40.4% of the total. For the Faculty of Pure & Applied Sciences at least, it would appear that the changes associated with the Semester System and the movement to the GPA could be having a detrimental effect on the quality of the degrees being obtained.

Level of Degree	2004/2005		2005/2006		2006/2007		2007/2008	
	N	%	N	%	N	%	N	%
First	26	10.2	21	7.7	17	5.2	7	2.5
Upper Second	99	38.8	91	33.2	57	17.5	48	17.1
Lower Second	84	32.9	133	48.5	163	50.2	112	40.0
Pass	46	18.1	29	10.6	88	27.1	113	40.4
Total Graduating	255	100.0	274	100.0	325	100.0	280	100.0

GRADUATE STUDIES

The numbers registered in the Computer Based Management Information Systems (MIS) programme continued to increase, this year by 39.8% but throughput is perhaps being compromised since the size of the graduating class fell by 40.4%. This needs attention. Registrations in FPAS MSc programmes, however, continues to fall, albeit slowly, and valiant efforts will have to be made to weed out unproductive programmes, to formulate programmes for which there is a strong demand and to advertise these vigorously. Ways will have to be found to support programmes of national/social importance but which are of low demand. The MPhil and PhD programme numbers seem to be holding steady with the numbers of registered and graduating students showing no marked trends.

	REGISTERED				GRADUATING†			
	04/05	05/06	06/07	07/08	04/05	05/06	06/07	07/08
MIS*	118	115	103	144	47	(44)	47	(28)
MSc	165	130	102	126	48	35	39	17
MPhil	167	175	166	158	20	8	14	11
PhD	71	68	76	70	16	4	7	11
Diploma	11	7	26	13	–	–	–	7
Total	532	495	473	511	131	91	107	74

*MIS students are jointly taught by MSB and Computer Science staff and on alternate years are assigned to either FPAS or FSS (in 2007/08 they were assigned to FSS).

†These are numbers for the class of the preceding year, graduating at the start of the year under consideration

GRANTS / INCOME

The Faculty's take of internal grant funds fell precipitously to J\$4.9 m and the number of grants gained almost halved. The number of external grants, on the other hand, increased from 21 to 25 and the amount brought in from J\$46.9 m to J\$66.2 m (41%). If this represents a tendency to reduce dependence upon internal funds and to successfully pursue external funding, then this is a very good movement. Reported income-generating activity rose from J\$19.3 m from 19 activities in 2006/07 to J\$50.7 m from 27 activities. This marked rise not only in the amounts being generated (162%) but in the number of reported activities is gratifying and must be encouraged as there is still a long way

to go. It is still remarkable that the Biotechnology Centre which by its very nature might be regarded as a potentially good revenue generating entity contributes nothing to this pool of important funds. NPI and MIAS also continue to contribute little or nothing and the expectations will continue to rise as their years of operation increase.

Department	Internal Grants	N	External Grants	N	Income Generated	N
Chemistry	\$487,647	2	\$2,696,274	2	\$27,631,645	7
Electronics Unit	--	--	--	--	\$5,740,000	3
Geog/Geography	\$685,481	1	\$15,848,882	7	\$50,000	1
Life Sciences/CMS	\$2,342,758	3	\$22,678,147	9	\$10,319,657*	9
Math & CompSci	\$350,000	1	--	--	\$600,000	2
Physics	\$427,980	1	\$22,805,628	2	\$6,096,020	4
Biotechnology	\$570,640	1	\$2,190,640	5	--	--
NPI	--	--	--	--	\$270,000	1
Total	\$4,864,506	9	\$66,219,571	25	\$50,707,322	27

*Income here is surplus after expenditures
Currency is stated in J\$ equivalents converted, where necessary, at a rate of J\$71.33 to US\$1

CONCLUSIONS

One might conclude that in many respects the Faculty has had a very good year. Academically there has been much activity and interchange. Productivity has increased – certainly in terms of numbers of refereed journal articles and conference presentations and non-refereed publications. Income generating activities showed healthy movement and activities relating to curriculum reform, outreach, production of work-ready graduates, and increasing student centeredness remain foci of productive action. We still need to understand and repair, however, the real constraints that limit publication output and the success of the taught Masters programmes and that result in a negative and suffocating atmosphere for many of our Graduate students and slowed throughput for Undergraduates.